

Message

From: Benton, Tim [Tim.Benton@WestonSolutions.com]
Sent: 4/15/2016 7:34:37 PM
To: Daly, Eric [Daly.Eric@epa.gov]
CC: Gaughan, Daniel [Gaughan.Daniel@epa.gov]; Nwosu, Bernard [Ben.Nwosu@WestonSolutions.com]
Subject: FW: Cost Estimate for T&D of low level rad material at the Canadian Uranium and Radium Site in Mt Kisko, NY

Eric,
Please see below the T&D cost estimate for the Canadian Uranium and Radium Site. I do apologize about the extremely long time to get this information over to you but Bob Schoenfelder has been extremely busy coordinating a large number of rad Sites out in EPA, Region 6. At this point it does not seem that this Site is yours as Dan Gaughan was acting as the lead OSC so I have included him on this email as well. If you guys have any questions about any of the information provided below please just let me know and I will coordinate a call with Bob to discuss further. Again, I apologize about the delay in getting you the information!

Thanks,

Tim

From: Schoenfelder, Robert P.
Sent: Monday, April 11, 2016 1:18 AM
To: Benton, Tim
Cc: Schoenfelder, Robert P.
Subject: Cost Estimate for T&D of low level rad material at the Canadian Uranium and Radium Site in Mt Kisko, NY

Hello Tim;

The following provides the summary T&D cost estimate information for the Canadian Uranium and Radium Corporation (CURC) site in Mt. Kisko, NY. The cost estimating factors are from Energy Solutions for disposal at their site in Clive, UT and from US Ecology for disposal at their subtitle C disposal site in Michigan. The process for determining the estimated costs, and the cost factors applied, are the same that were used for the Holy Trinity Site and had been determined for the Niagara Falls Site by Nels Johnson in 2015. This document repeats the introductory information that was provided for the relevant disposal sites so that this report can stand as a complete summary without referring to Nels' September 2015 email. That information is relevant for the CURC Site because some of the contaminants of concern are the same and the concentrations of the contaminants are not extremely different. The CURC site is located in NY state as are the previously estimated sites. However, the CURC site is located at the southeast corner of the state and the prior sites are located along the western state boundary, so additional transportation costs are included in this estimate. The volume of waste for the CURC site is significantly smaller than for the sites near Niagara Falls, NY and the waste may not reasonably be combined with the wastes from the other sites, so the unit rates for transportation and disposal do not include volume discounts. Other differences between the prior sites and the CURC site are: 1) the isotopes that are present in concentrations that are appreciably greater than background levels are from the uranium-238 decay chain only, and thorium-232 chain isotopes are present in near-background concentrations; and 2) the concentrations of U-238 isotopes are similar to those found at the prior sites.

There are 4 primary radioactive waste disposal sites for bulk material. They are located in Texas, Colorado, Utah, and Idaho. There also exists a subtitle C landfill in Michigan that can accept limited concentrations of TENORM. Due to mergers and acquisitions over the past few years, the industry has become vertically integrated whereby the companies that own the disposal sites can also offer transportation services. Thus, cost estimates from the companies typically are all-inclusive from transportation through final disposal. Costs for on-site excavation and loading are excluded and are assumed to be determined and handled via existing EPA contracts and procedures.

Two of the disposal sites had been contacted to request their cost estimates for T&D based upon the following information:

1. The projected volume of radwaste is estimated to be 500 CY for FY2016. Note for purposes of this estimate, a CY of waste is approximately equivalent to 1 ton, so the units are interchangeable.
2. The waste material is assumed to be primarily soil but may contain some broken pavement and building rubble. No restrictions or assumptions are made about allowable soil moisture content but this should be considered when preparing the bid document. Typically, radioactive waste disposal sites will not accept shipments that contain standing water or that are leaking liquids.
3. The waste is contaminated only with radionuclides. No hazardous constituents were identified. If the waste is found to be also hazardous, ie "mixed waste", these cost estimates are probably not accurate.
4. The maximum concentrations detected in the preliminary characterization samples were Ra-226 at 129 pCi/g, Th-230 at 42 pCi/g, and U-238 at 1.83 pCi/g. Validated data showed similar maximum values with radium-226 ranging up to 135 pCi/g, Th-230 up to 83 pCi/g, and U-238 at 0.8 pCi/g. These maximum values are up to 10 times the maximum concentrations for the Niagara Falls site, which is in line with the concentrations at the Holy Trinity site.
5. It is important to note that isotope concentrations were significantly lower than the maximum values reported above for many of the samples for which data were provided, and some were very low and near background values. Of the ten preliminary samples, only one sample demonstrated the maximum concentrations and the other nine samples ranged from near background to one-tenth of the maximum value. Of the seven locations listed in the validated data table, maximum values were recorded in three samples and the other four locations were less than one-fifth of the maximum value. The dilution and mixing that will occur during excavation and packaging of the waste may result in average concentrations that are significantly lower than the maximum measured values.
6. Due to these relatively low concentrations, the waste may be exempt from regulations regarding the shipment of DOT class 7 radioactive materials.

Cost estimates were received from Energy Solutions and US Ecology. The unit rates that were applied for the Holy Trinity Site material are similar to those applied here to the Canadian Uranium and Radium Corporation Site material, but are somewhat higher because of the small volume of waste and greater distance that the waste will be shipped. Reasons for the similarity in the rates are as follows:

- Characteristics and activity concentrations of the waste materials from the sites are shown to be similar, based on the information provided for this exercise.
- Typically cost estimates are provided by Rad Waste disposal firms for a finite time period. The exact timing for the CURC Site removal is uncertain and is assumed to fall past the expiration date of any current cost estimates. This cost estimate is provided for planning purposes, and will have to be updated when the actual work schedule and funding needs are determined.
- The less expensive option, the landfill in Michigan, may be viable for the waste, but the final characteristics of the waste, which will be determined when the material has all been excavated and prepared for shipping, will be the values that determine whether waste acceptance criteria are met for a specified disposal site, and whether DOT radioactive material regulations apply. These two estimates should be considered upper and lower range estimates, and the higher cost option (Energy Solutions) should be used if a conservative value is desired for budget planning purposes.

Results from the two disposal sites are as follows.

- A. Energy Solutions operates the radioactive disposal site in Utah, and probably has the broadest license to receive higher concentrations of more radionuclides. They have been in business for about 25 years under various names, and have had substantial disposal contracts with DOE, EPA, and many industrial clients. By acquisition a few years ago they acquired MHF Logistical Solutions which Weston has used in the past for transportation assistance. In September 2015, Scott Dempsey of MHF (724-312-6244) provided cost estimated for transportation and disposal, and confirmed that while they are a subsidiary of Energy Solutions, they can provide transportation support to other disposal providers. Using estimated rates from MHF to package, transport, and dispose of the relatively small volume of CURC material, the cost for disposal at the Energy Solutions facility in Clive Utah is \$650 to \$700 per CY, with the transportation and disposal costs about equal. The soil be may be packaged in "lift liners" , also called "super

sacks", loaded onto flatbeds, and trucked to one of their rail trans loading facilities, where they would be loaded into gondolas and rail shipped to the Clive disposal site. Assuming 500 CY of material, the budgetary estimate is then \$325,000 to \$350,000.

- B. US Ecology operates the disposal site in Idaho, and in early 2015 they acquired the aforementioned subtitle C disposal site in Michigan. US Ecology has been in business for at least 40 years under various names, but the Idaho disposal site for bulk radioactive waste material has been open for about 10 years. Tim Curtin (908-419-6685) provided the information for disposal of the Niagara Falls Site material, which is similarly applied here to address the Canadian Uranium and Radium Corporation site material, with appropriate adjustments to address the volume and transportation differences. Based on the concentrations given, and assuming that the waste be trucked directly from Mt. Kisco to their disposal site near Belleville, MI, the estimated T&D cost is \$400 to \$450 per CY. Assuming 500 CY of waste, the budgetary estimate is \$200,000 to \$225,000.

Nels noted on the internet in September that the state of Michigan may have been reviewing their permit for radioactive contaminants. While Tim confirmed their ability to receive this waste at that time, this option may be impacted in some manner before the CURC Site needs disposal support.

Robert Schoenfelder, CHP
Weston Solutions, Inc
3840 Commons Ave. NE
Albuquerque, NM 87109
(505) 837-6556

CONFIDENTIALITY: This email and attachments may contain information which is confidential and proprietary. Disclosure or use of any such confidential or proprietary information without the written permission of Weston Solutions, Inc. is strictly prohibited. If you received this email in error, please notify the sender by return e-mail and delete this email from your system. Thank you.